REMARKS

I. INTRODUCTION

In response to the Office Action dated April 15, 2005, claims 1, 8, 25, 27, 29 and 31 have been amended and claims 26 and 30 have been canceled. Claims 1-16, 20-21, 25, 27-29 and 31-32 remain in the application. Entry of these amendments, and re-consideration of the application, as amended, is requested.

III. PRIOR ART REJECTIONS

A. The Office Action Rejections

In paragraphs (2)-(3) of the Office Action, claims 1, 2, 7-9, and 14 were rejected under 35 U.S.C. §102(e) as being anticipated by Laakso et al., U.S. Patent No. 6,456,605 (Laakso). In paragraph (4) of the Office Action, claims 25 and 29 were rejected under 35 U.S.C. §102(e) as being anticipated by Wilson, U.S. Patent No. 6,718,347 (Wilson). In paragraph (7) of the Office Action, claims 15-16 and 20-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kang, U.S. Patent No. 6,397,043 (Kang) in view of Chen, U.S. Patent No. 5,960,361 (Chen). In paragraph (8) of the Office Action, claims 26-28 and 30-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wilson in view of Conrow et al., U.S. Patent No. 5,526,409 (Conrow). In paragraph (9) of the Office Action, claims 3-5 and 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Laakso in view of Maru, U.S. Patent No. 6,385,180 (Maru).

However, in paragraph (10) of the Office Action, claims 6 and 13 were indicated as being allowable if rewritten in independent form to include the base claim and any intervening claims.

Applicants' attorney acknowledges the indication of allowable claims, but respectfully traverses the rejections.

B. The Laakso Reference

Laakso describes the mutual arrangement of packets to be transmitted in a radio system, where the transmitted data is formed into packets (204, 205, 206) for the transmission. The system comprises at least two transmitting devices which transmit substantially simultaneously and substantially on the same frequency, whereby the carrier power transmitted by the first transmitting device is interference power to those receiving devices, to which the second device transmits carrier power, and vice versa. In order to arrange the packets there is generated a utility function with a value, which depends on the carrier power and the interference power and which can be obtained by

PAGE 8/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

calculation for the transmitted packets in their mutual transmitting order at that moment. The packets to be transmitted are arranged in a mutual transmission order corresponding to the extreme value of the utility function.

C. The Kang Reference

Kang describes a method for controlling the forward link power independent of reverse link power control. In a mobile communication system where the reverse link is degraded thereby preventing the forward link status to be sent to the base station, the base station estimates the forward link power using power control information received via the reverse link prior to the reverse link being degraded. The forward link is improved using the power control information and once improved the reverse link is improved via the improved forward link.

D. The Chen Reference

Chen describes a method for controlling the forward link power independent of reverse link power control. In a mobile communication system where the reverse link is degraded thereby preventing the forward link status to be sent to the base station, the base station estimates the forward link power using power control information received via the reverse link prior to the reverse link being degraded. The forward link is improved using the power control information and once improved the reverse link is improved via the improved forward link.

E. The Wilson Reference

Wilson describes a method for use in a computer system including first and second computers and first and second storage systems, wherein the first storage system is coupled to the first computer to store data transferred from the first computer to the first storage system and the second storage system is coupled to the second computer to store data transferred from the second computer to the second storage system. The method is for updating data stored on at least one of the first and second storage systems, and includes updating a first logical volume of data stored on the first storage system with a first set of data transferred from the first computer to the first storage system; receiving, at the first storage system, a second set of data transmitted from the second storage system to the first storage system via at least one communication path that does not pass through the first computer; and updating the first logical volume of data with the second set of data transmitted from the second storage system.

PAGE 9/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

F. The Conrow Reference

Conrow describes a point-of-presence device installed in a merchant establishment as an interface between a retail information system and a transaction card authorization network. By using a simple message data format between the retail information system and the device, the device insulates the retail information system from changes to local communication access methods and changes to point-of-sale compliance requirements initiated by the card processor. The device first establishes a dial-up telephone connection to the authorization network and then interleaves both financial data messages and non-financial messages over the same telephone line to the authorization network. The device provides authorization response times that substantially equal response times provided by leased line connections to the authorization network. In addition, the present invention provides improved diagnostic and draft capture capability for the retail information system.

G. The Maru Reference

Maru describes a high-speed search system for CDMA, wherein plural (M) symbols which are subjected to spread frequency coding with a spreading code called as a short code are prepared when synchronization of the spreading code is established before synchronization of carrier is established in a mobile station used in a CDMA cellular system, data which are obtained by forming an orthogonal code with the polarities of the M symbols are set as a down signal, and when the orthogonal code concerned is detected, coherent integration is performed by a correlator having combinations of the polarities which can be possibly taken by the code over the plural symbols (of M) constituting the code.

H. The Applicants' Invention is Patentable Over the References

The Applicants' invention, as recited in claims 1-16, 20-21 and 25-32, is patentable over the references, because Applicants' claims contain limitations not taught by the references.

1. Claims 1-14 are Patentable over Laasko and Mura

The Office Action asserts that Laakso teaches the limitations of independent claims 1 and 8 at col. 8, lines 20-49, col. 19, lines 45-64, and col. 1, lines 17-39. These portions of Laakso are set forth below:

PAGE 10/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

Laakso: Col. 8, lines 20-49 (actually lines 20-48)

FIG. 3a shows a radio resource knapsack 300 suitable to be used in the TDMA cellular radio system part shown in FIG. 1, whereby the radio resource knapsack includes a pair 301 to 310 formed by two consecutive frames from each of ten base stations. The task of the base station controller 101 shown in FIG. 1, or of some other device optimising the utilisation of the resources, is to place the packets to be transmitted from each base station into the slots of the frames of the corresponding base station in a manner that is as advantageous as possible. In the figure it is assumed that the slot division of the frames is the same in each cell, which is not necessary regarding the invention. FIG. 3b shows a radio resource knapsack 320 which is suited to be used in a CDMA cellular radio system, whereby the radio resource knapsack includes one frame 321 to 330 from each of the ten base stations, whereby each frame is divided into slots by using almost orthogonal spreading codes, whereby the slots are superimposed with other in the direction of the time and in the direction of the frequency (for the sake of clarity the slots are shown only partly on top of each other in the figure). FIG. 3c shows another radio resource knapsack 340, which is suitable to be used in the CDMA system, which concerns only one base station and which contains all those slots 341 to 350, in which said base station can simultaneously transmit packets. The different widths of the slots 341 to 350 mean that the simultaneous CDMA slots can represent different data communication capacities, depending on the spreading ratio of the spreading code used in them.

Laakso: Col. 19, lines 45-64

Instead of the above presented trial method the control of the transmit power can also be made by a calculation method based on optimisation theory, where the variables are the transmit power values of packets placed in simultaneous slots, and where the utility function to be maximised is a function which is dependent on the C/I ratios calculated for the packets on the basis of the transmit powers and the distance attenuation. A method which is suitable to find the extreme value of a multivariable function is the so called conjugate gradient method, which however requires a very high calculation capacity if there is a large radio resource knapsack to be optimised. Another variant of the above presented power control method is that the C/I ratio used as the determination basis is replaced for instance by the signal-to-noise ratio, by the estimated bit error rate (BER) or frame error rate (FER), or by any other factor representing the quality of the radio connection. Also in the calculations regarding the power control it is possible to use the top and bottom cutters for the C/I ratio (or another corresponding factor) in the same way as was presented above.

Laakso: Col. 1, lines 17-39

In cellular systems it is common that the radio communication between the base stations and the terminals comprises cyclically repeating frames which are divided into smaller parts, which can be called slots. A frame represents a certain period, during which a certain frequency band is divided to be used by certain connections with the aid of a multiple access method. Common multiple access methods are TDMA (Time Division Multiple Access), CDMA (Code Division Multiple Access) and FDMA (Frequency Division Multiple Access). In TDMA the

PAGE 11/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

slots in the frames are time slots, whereby one frame can contain for instance eight slots, of which each can be allocated to be used by a certain radio connection. In some systems the size and number of the time slots in a frame can vary from one frame to another. In CDMA the slots represent mutually orthogonal or almost orthogonal spreading codes, which during at least on frame can be assigned to a certain radio connection. In FDMA the slots are narrower parts of the utilised frequency bandwidth. There has also been proposed combinations of FDMA, CDMA and TDMA where the frame is divided into time slots, which further can be divided into smaller parts, based on either time, frequency or code.

With regard to dependent claims 3-5 and 10-12, the Office Action asserts that Laasko teaches the limitations of the independent claims as set forth above, and that Maru teaches the remaining elements of the claims at col. 3, lines 26-27, col. 7, line 62 to col. 8, line 8, and col. 5, line 33-48.

These portions of Maru are set forth below:

Maru: col. 3, lines 26-27

Still further, in the present invention, one code of the orthogonal codes is used as a header.

Maru: col. 7, line 62 to col. 8, line 8

FIG. 9 shows the coherent integration when there is a frequency deviation in carrier between a mobile station and a base station, and the correction is applied by the rotational feathers corresponding to an advance frequency (f+.delta.f), a synchronization frequency (f) and a delay frequency (f-.delta.f) at the symbol addition time. The correlative comparison target can be. accurately provided with ROM tables of sine and cosine. However, FIG. 9 shows a case that a correlative comparison target for which the frequency deviation is corrected by a simple circuit with no ROM table is provided, and the phase rotation due to the frequency deviation between symbols is set to .pi./2 with the advance frequency and -.pi./2 with the delay frequency, and they are implemented by the addition and the subtraction respectively.

Maru: col. 5, line 33-48

Next, the operation of acquiring the synchronization of the spreading code on the basis of the judgement result will be described.

In FIG. 1, the serial search and the parallel search are mixed with each other with the parallel number set to k in order to shorten the search time. In FIG. 1, a parallel-arranged k-th block is illustrated, and k blocks having the same construction are arranged to form one search circuit. Each of spread spectrum signal generating circuits with phase shift function 101 to 1-k has a fixed phase shift, and the addition start position for the unit signal of each of the ring buffers 3-1 to 3-k is also shifted due to the above phase shift. Accordingly, the synchronization acquisition of the spreading code can be performed on the basis of the maximum value of the correlation value corresponding to each correlator.

PAGE 12/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

The above discussion does not teach or suggest replacing at least a portion of a frame with an orthogonal code, determining a bit error rate for the orthogonal code in the frame transmitted by the wireless communications system, and adjusting transmit power in the wireless communications system based on the determined bit error rate.

Instead, the above discussion at col. 8, lines 20-49 of Laasko merely refers to the orthogonal spreading codes used to "chip" a frame prior to transmission in a CDMA system, while the above discussion at col. 1, lines 17-39 of Laasko merely notes that each slot represents a (different) orthogonal spreading code. Further, the above discussion at col. 19, lines 45-64 of Laasko merely refers to the use of a bit error rates for power control.

Moreover, the above discussion at col. 3, lines 26-27, col. 7, line 62 to col. 8, line 8, and col. 5, line 33-48 of Maru merely refers to the synchronization of orthogonal spreading codes in a CDMA system, but not the use of an orthogonal code as a replacement for a portion of a frame to support the determination of bit error rates.

2. <u>Claims 15-16 and 20-21 are Patentable over Kang and Chen</u>

With regard to independent claims 15 and 20, the Office Action asserts that Kang teaches the limitations "determining whether a frame was received in error during a transmission in the wireless communications system" and "increasing transmit power for a re-transmission of the frame received in error in the wireless communications system" at col. 5, lines 43-44, col. 6, lines 41-47, Fig. 6, and col. 6, line 66 to col. 7, line 18. In addition, the Office Action asserts that Chen discloses "increasing the transmit power ... in accordance with the frame's number, in accordance with an amount of data transmitted, or by steps when one or more starting frames are received in error," at col. 3, line 48 to col. 4, line 16, and in Figs. 2-3.

These portions of Kang and Chen are set forth below:

> <u>Kang: Col. 5, lines 43-44</u>
> If ACK is not received or NACK is received, the BTS or mobile station re-transmits the corresponding message.
>
> <u>Kang: Col. 6, lines 41-47</u>
> When the BSC receives a reverse erasure frame, the BSC confirms whether the PMRM message which includes the forward error rate count is higher than a specified level of the reverse erasure frame in the PMRM previously received, and if a forward error is higher than a specified level then the forward transmit power is increased, otherwise the present power control status of the BTS is maintained.

PAGE 13/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

Kang: Col. 6, line 66 – Col. 7, line 18

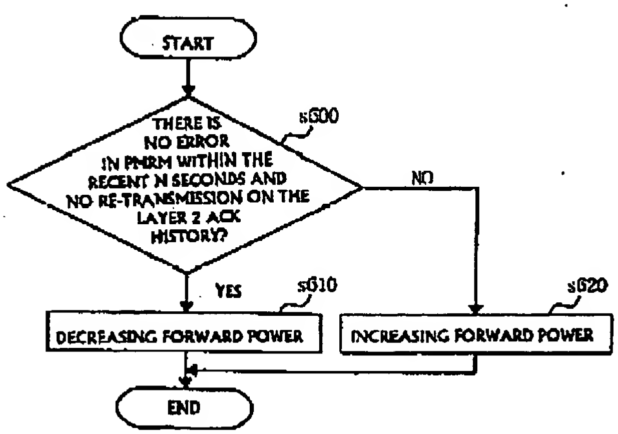
FIG. 6 shows a flow chart illustrating a method for controlling forward power through changes in PMRM or Layer 2 Ack history according to the present invention. As illustrated in FIG. 6, the BSC determines whether there is at least one error in PMRMs received within the most recent N seconds and whether a message has been transmitted on the Layer 2 Ack history, at step 600.

Since the PMRM includes the forward frame error rate, the BSC confirms whether all frame error rates, which are included in those PMRMs received within the most recent N seconds, are less than or equal to a specific threshold. If all frame error rates included in the PMRMs received within the most recent N seconds, are less than or equal to a specific threshold, the BSC determines that no error occurred in the forward link within the recent N seconds.

If there is no error in the PMRMs received within the most recent N seconds and no message has been re-transmitted on the Layer 2 ACK History, the BSC orders the BTS to decrease the forward transmit power at step 610, otherwise, the forward transmit power is increased at step 620.

Kang: FIG. 6

FIG. 6



Chen: Col. 3, line 48 to col. 4, line 16

In accordance with the invention, a signal transmission power control system is provided with a means for transmitting signals initially at a pre-selected transmit power level; a means for successively, incrementally decreasing the transmit power level by a first amount; and a means for receiving a signal indicating that the transmit power level needs to be increased. The system also includes a means, responsive to receipt of the signals indicating that the transmit power level needs to be increased, for increasing the transmit power level and a means for decreasing the transmit

PAGE 14/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

power level by a second amount, greater than the first amount, following transmission of signals for a predetermined period of time without receipt of the signal indicating that the transmit power level needs to be increased. Hence, with this system, the transmit power level is incrementally decreased for some predetermined period of time. If no feedback signals indicating that the transmit power needs to be increased are received during that period of time, then the system decreases the transmit power by a greater amount to achieve an immediate, greater amount of power reduction. In other words, a two-tiered power reduction scheme is employed.

By providing the foregoing two-tiered power reduction scheme, the average power required is typically reduced over that of the sawtooth feedback technique described above, particularly in circumstances where the minimum power requirements remain relatively low but are interspersed with occasional peaks of higher power requirements. In such circumstances, the two-tiered technique can provide significantly greater average power reduction than the aforementioned sawtooth technique. Hereinafter, the second sharper drop in transmit power provided by this two-tiered technique is also referred to as a "fast downward move" in the sense that a drop or move to a lower power transmission level occurs faster than the incremental power reduction of the aforementioned sawtooth technique.

Chen: Fig. 2

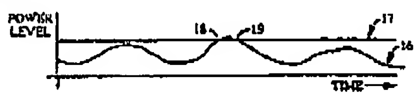


FIG. 2A

FIG. 2B

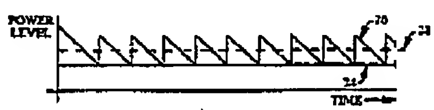


FIG. 2C

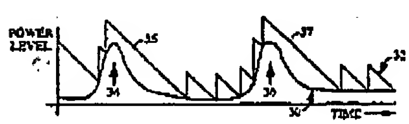


FIG. 2D

PAGE 15/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

Chen: Fig. 3

FIG. 3A

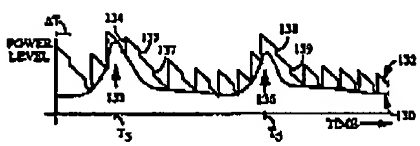


FIG. 3B

The above discussion of Kang merely refers to controlling forward power based on forward frame error rates.

Further, the above discussion of Chen merely refers to a two-tiered power reduction scheme where the transmit power level is incrementally decreased for some predetermined period of time and, if no feedback signals indicating that the transmit power needs to be increased are received during that period of time, then the transmit power is decreased by a greater amount to achieve an immediate, greater amount of power reduction.

Neither reference, taken individually or in combination, teaches or suggests increasing transmit power for the re-transmission of a frame received in error, in accordance with the frame's position, in accordance with the amount of data transmitted, or by steps when one or more starting frames are received in error.

3. Claims 25-32 are Patentable over the References

With regard to independent claims 25 and 29, the Office Action asserts that Wilson teaches the limitations "determining whether a portion of a frame was received in error during a transmission in the wireless communications system" and "invoking a re-transmission of the portion of the frame received in error without invoking a re-transmission of the entire frame in the wireless communications system" at col. 10, lines 27-43 and col. 17, lines 35-49.

These portions of Wilson are set forth below:

PAGE 16/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

Wilson: Col. 10, lines 27-43

The communication path 304 (FIG. 3) can be implemented in any of numerous ways, and the invention is not limited to any particular type of communication path. In one illustrative embodiment, for example, the communication path 304 is implemented using one or more conventional communication links (e.g., ESCON links) between the storage controllers 302a-b. In another illustrative embodiment, the communication path 304 includes interface units 608a-b (see FIGS. 6 and 7) to interface the storage controllers 302a-b with a commercially available communication channel 610, such as a T3 communication channel (described below). In further illustrative embodiments, the communication path 304 is implemented over the network cloud 114 that couples the Web servers, or over a wireless communication link (see FIG. 16). A detailed description of each of these alternative implementations of the communication path 304 is provided below.

Wilson: Col. 17, lines 35-49

Error checking and recovery is conventionally performed in one of two ways. When a large block of data is transferred (e.g., 64 k bytes in the examples above), error checking and recovery may be done solely on the block level, such that if an error occurs in any of the transmitted bytes of data in the block, the entire block is re-transmitted. This type of error checking is generally employed with a very reliable transmission medium through which errors are infrequent. Alternatively, error checking and retransmission may be performed on a lower level (e.g., the 1 k byte frames discussed in the example above). Thus, if the transmission medium is relatively unreliable so that more frequent errors occur, only a smaller frame of data need be re-transmitted to recover from the error, so that a large performance penalty is not incurred in re-transmitting the entire block.

The above discussion at col. 17, lines 35-49 does not determine whether a portion of a frame was received in error, wherein the frame includes an indicator field comprised of a plurality of bits, each of the bits indicates parity for a corresponding portion of the frame, and one of the bits indicates a parity error for its corresponding portion of the frame, and then re-transmit only that portion of the frame. Instead, Wilson merely describes re-transmitting the entire frames that are in error.

With regard to dependent claims 26-28 and 30-32, the Office Action asserts that Wilson teaches the limitations of the independent claims as set forth above, and that Conrow teaches the remaining elements of the claims at col. 18, lines 7-24.

These portions of Conrow are set forth below:

Conrow: Col. 18, lines 7-24

A CSI formatted frame is preceded by a frame-opening STX 177 which is the ASCII start-of-text character. The CSI format achieves data transparency by providing a frame length field 179 following the frame opening STX 177. The length

PAGE 17/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

> indicator field 179 provides a byte count between the length indicator 179 and EXT 181 (the ASCII end-of-text character) and is representation of message length (headers plus message data). The length indicator 179 is used to locate the end of the frame independent of the contents of the frame data. The end of the frame includes an EXT 181 which is used as a length check plus a Longitudinal-Redundancy-Check character (LRC) 183. The LRC 183 is used to detect single bit errors and general failures on the otherwise nearly error free physical interface. The value of each bit in the LRC character 183, excluding the parity bit, is defined such that the total count of ONE bits encoded in the corresponding bit location of all characters of the data shall be even (this is also knows as an EXCLUSIVE OR (XOR) operation).

The above discussion of Conrow is not relevant to Applicants' claims, because the Longitudinal-Redundancy-Check (LRC) character is not used in invoking a re-transmission of the portion of the frame received in error without invoking a re-transmission of the entire frame in the wireless communications system. Indeed, the value of each bit in the LRC character is defined such that the total count of '1' bits encoded in a corresponding bit location in all characters of the data shall be even, and these corresponding bit location in all characters of the data cannot be retransmitted without re-transmitting the entire frame. Consequently, Conrow refers to a different structure than that described in Applicants' claims.

4. Summary

In summary, the cited references do not anticipate or render obvious Applicants' claimed invention. Moreover, the various elements of Applicants' claimed invention together provide operational advantages over the references In addition, Applicants' invention solves problems not recognized by the references.

Thus, Applicants' attorney submits that independent claims 1, 8, 15, 20, 25, and 28 are allowable over the references. Further, dependent claims 2-7, 9-14, 16, 21, 27, 29 and 31-32 are submitted to be allowable over the references in the same manner, because they are dependent on independent claims 1, 8, 15, 20, 25, and 28, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-7, 9-14, 16, 21, 27, 29 and 30-32 recite additional novel elements not shown by the references.

IV. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain

PAGE 18/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44

that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

GATES & COOPER LLP
Attorneys for Applicants

Howard Hughes Center
6701 Center Drive West, Suite 1050
Los Angeles, California 90045
(310) 641-8797

Date: June 15, 2005

By: ______________________
Name: George H. Gates
Reg. No.: 33,500

GHG/amb

PAGE 19/19 * RCVD AT 6/15/2005 4:38:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/8 * DNIS:8729306 * CSID:+13106418798 * DURATION (mm-ss):05-44